



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/552,237

12/29/2006

Pierre Laboube

5310-08800

6301

35690

7590

06/10/2010

MEYERTONS, HOOD, KIVLIN, KOWERT & GOETZEL, P.C.

P.O. BOX 398

AUSTIN, TX 78767-0398

EXAMINER

HAMO, PATRICK

ART UNIT

PAPER NUMBER

3746

NOTIFICATION DATE

DELIVERY MODE

06/10/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent_docketing@intprop.com

ptomhkg@gmail.com

Office Action Summary	Application No. 10/552,237	Applicant(s) LABOUBE ET AL.	
	Examiner PATRICK HAMO	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 16 and 17 are objected to because of the following informalities: claim 17 is dependent on non-existent claim 18, while the examiner presumes claim 16 was meant to be dependent on claim 15 that immediately precedes it, rather than claim 17 as claimed. Appropriate correction and clarification is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi et al., US 5,980,218.

In regard to claim 1:

Takahashi discloses a centrifugal compressor unit comprising a motor 2 driving a rotor and at least one compressor 1a, 1b with a stator body (the non-rotating portion of centrifugal compressor) and impellers 28a, 28b driven by the rotor, the motor and compressors mounted in a common housing (see fig. 2) sealed against the outside, a set of bearings 25, 26 for axially 26 and radially 25 guiding the rotor, and cooling means that tap off some of the gas handled by the compressor at an outlet 5a from a first stage compressor 1a (via 14a and 20a to 16, fig. 1), passing the gas through the motor means and through the bearings (see fig. 3) and reinjecting into the inlet side 4a (via 17 and 15, fig. 1), wherein the cooling means comprises a set of internal passages (see fig. 3, unlabeled passages with inlets at 16a-d and outlets at 17a-e), wherein the flow of cooling gas in the motor means (from 16b to 17b/c) is separate from the flow of cooling gas in the bearings (from 16a to 17a and 16c/d to 17d/e), the flow converging outside the compressor unit at 17, or at least at 15, upstream of the first compression stage.

In regard to claim 2:

The lines 16a-d are external to the compressor unit and collect the gas from the outlet side of compressor 1a and feed into the internal passages.

Art Unit: 3746

In regard to claim 3:

The passages for motor and bearings are parallel.

In regard to claims 4 and 11:

The filter 13 filters gas handled by the compressor.

In regard to claim 6:

Each internal passage of the bearings (16a to 17a, 16c to 17d and 16d to 17e) is directed radially externally to the compressor unit and feeds one bearing each (25a, 26, and 25b respectively).

In regard to claim 9:

Pressure regulator 8 regulates the flow rate of the coolant for the motor and the bearings.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Grob et al., US 6,464,469.

Art Unit: 3746

In regard to claims 5 and 12:

Takahashi discloses all of the limitations substantially as claimed except for an axial passage running from one bearing to the other and fed at one of its ends by the external lines, the radial bearings arranged at ends of the driven shaft. However, Grob teaches radial bearings 5 on two ends of a motor 2, both radial bearings cooled by gas flowing in through passage 11, the passage connecting them running axially and radially outward of the motor 2. It would have been obvious to a person having ordinary skill in the art to have modified the coolant system of Takahashi with that of Grob, a coolant system for a substantially similar turbocompressor with motor and bearing arrangement in a sealed motor/compressor unit, as the results of orientation and arrangement of the coolant flow, as taught by Takahashi and Grob are dependant on design constraints and one of ordinary skill in the art would have found the results of providing an axial passage connecting both bearings as taught by Grob predictable.

In regard to claim 13:

Takahashi discloses that each internal passage of the bearings (16a to 17a, 16c to 17d and 16d to 17e) is directed radially externally to the compressor unit and feeds one bearing each (25a, 26, and 25b respectively).

In regard to claims 14 and 15:

Takahashi discloses that each internal passage of the bearings (16a to 17a, 16c to 17d and 16d to 17e) is directed radially externally to the compressor unit and feeds

Art Unit: 3746

one bearing each (25a, 26, and 25b respectively), and the flow of gas from the bearings and the motor is mixed in 17. However, Takahashi does not explicitly disclose that the motor is fed with cooling gas via an orifice formed in an end cover. Takahashi instead discloses that the motor is fed cooling gas through the cylindrical cover at 29b.

However, one having ordinary skill in the art would have found this to be an obvious rearrangement of parts and a design choice predicated on the arrangement of the motor and compressor stages. It would have been obvious to one having ordinary skill in the art to arrange the motor coolant inlet in an end cover of the motor/compressor unit to obtain the predictable result of supplying coolant to the motor.

In regard to claim 16:

Pressure regulator 8 of Takahashi controls the flow rate of the coolant for the motor and the bearings.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi.

Takahashi discloses that each internal passage of the bearings (16a to 17a, 16c to 17d and 16d to 17e) is directed radially externally to the compressor unit and feeds one bearing each (25a, 26, and 25b respectively), and the flow of gas from the bearings and the motor is mixed in 17. However, Takahashi does not explicitly disclose that the motor is fed with cooling gas via an orifice formed in an end cover. Takahashi instead discloses that the motor is fed cooling gas through the cylindrical cover at 29b.

Art Unit: 3746

However, one having ordinary skill in the art would have found this to be an obvious rearrangement of parts and a design choice predicated on the arrangement of the motor and compressor stages. It would have been obvious to one having ordinary skill in the art to arrange the motor coolant inlet in an end cover of the motor/compressor unit to obtain the predictable result of supplying coolant to the motor.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of applicant's admitted prior art (fig. 1, paragraphs [0004]-[0008]).

Takahashi discloses all of the limitations of claims 1, and discloses the means for collecting flows of cooling gas on the same side of the compressor unit (see fig. 3). However, Takahashi fails to disclose an equalizing piston. Applicant admits as prior art an integrated motor/compressor unit with an equalizing piston 49 that equalizes the axial pressure applied to the driven shaft while the compression unit is in operation (paragraph [0009]) such that it would have been obvious to a person having ordinary skill in the art to have added the piston to the unit of Takahashi to aid in equalizing pressure during operation of the compressor.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 16 in view of applicant's admitted prior art.

The references as applied to claim 16 teach all of the limitations substantially as claimed, with Takahashi disclosing the means for collecting flows of cooling gas on the same side of the compressor unit (see fig. 3). However, the references fail to teach an

Art Unit: 3746

equalizing piston. Applicant admits as prior art an integrated motor/compressor unit with an equalizing piston 49 that equalizes the axial pressure applied to the driven shaft while the compression unit is in operation (paragraph [0009]) such that it would have been obvious to a person having ordinary skill in the art to have added the piston to the unit of Takahashi in view of Grob to aid in equalizing pressure during operation of the compressor.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Pugnet et al., US 7,144,226 teaches an integrated motor/compressor unit using compression gas for cooling.

Turanskyj, US 4,969,803 teaches an integrated motor/compressor unit with internal cooling passages.

Pilarczyk, US 3,942,908 teaches a gas turbine with internal cooling passages.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICK HAMO whose telephone number is (571)272-3492. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746

/Patrick Hamo/
Patent Examiner, AU 3746